

PROPERTIES OF A FORENSICALLY SIGNIFICANT HANDWRITING CHARACTERISTIC

by

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How do we identify an individual writer? What makes handwriting unique and therefore identifiable?

Forming an opinion regarding handwriting authorship is based on using a complex of forensically significant characteristics. As an aid to the lay person and/or the fact finder in conceptualizing and understanding the foundation of our work, I consider it important to explain the properties of the characteristics that I use to form my opinion regarding authorship.

In building and defending a reliable opinion of authorship, we seek fact-based evidence that can stand up to the challenges of cross examination far beyond simply relying on "form matching" during the comparison process. To better know the chances of being mistaken or mistook, Albert Osborn provides a list of twelve causes of error in forming one's opinion (including "basing an opinion on common qualities alone" (Osborn 388)).

To convey an understanding of how we identify an individual writer to the lay person and/or the fact finder, I have found it effective to give a brief foundation by explaining handwriting from the point of view of the writer's behavior in moving an implement (i.e., pen, pencil, lipstick, paint, etc.) on and off the surface (i.e., a piece of paper, a wall, a mirror or any substrate). In doing so, I portray handwriting as an artifact of the writer's behavior which attributes the written to the writer.

In 1992, my inaugural studies in forensic handwriting examination included specific advice from Marcel Matley, who was then my wise and knowledgeable mentor and is now my colleague and collaborator. He gave me two urgent suggestions that particularly apply here: "read Saudek" and "watch people write."

NOTE on Saudek: In 1928, Robert Saudek conducted and recorded extensive and carefully controlled handwriting experiments. In his fully illustrated book *Experiments with Handwriting*, Saudek lays forth the most comprehensive fundamentals in experimental handwriting research. Matley, in his lectures, is known to say, “Suffice it to say that if one does not know Saudek, one does not know handwriting. If one knows Saudek, and properly understands, one begins to know handwriting in a scientific way.”

Even today, I watch people write wherever and whenever I notice an opportunity. Sometimes I simply watch and make a mental note about the unique way they grip or move the pen. Sometimes I introduce myself and ask for a sample. Later, I study the sample to discover the artifacts of their movement that I can attribute to a cause (grip, movement, etc.). As a result, I form my authorship opinion(s) by attributing my observation of the writer’s movement of the implement therefore tying the writer to the written.

THE THREE PROPERTIES: Observable/Measurable/Habitual

Having gained insights about what makes handwriting unique and therefore identifiable from studying Saudek, Matley, and other noted authorities in the field, I apply three objective properties to a characteristic that render it forensically significant for use in forming my fact-based opinion regarding authorship. In addition to signatures, this applies to handwritten numbers, punctuation and cursive/printed writing styles.

1. Observable - It can be seen with the naked eye, a digital microscope or the use of another type of magnification (See Figure A). This establishes the observation as a fact.

Figure A illustrates the writer's malformed lower circles resulting from the writer’s impaired ability to move the pen. The angle “can only be produced as a result of a pause between a movement in one direction and a movement in another” (Saudek 223). Therefore, I consider this characteristic as being forensically significant due to the fact that

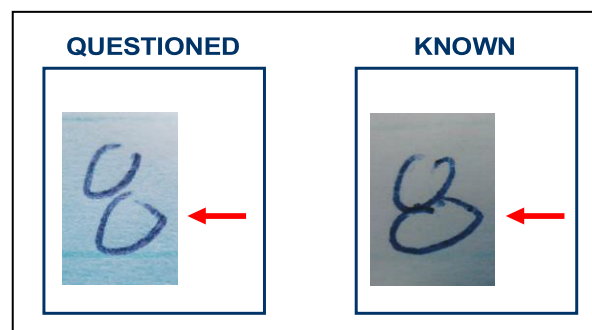
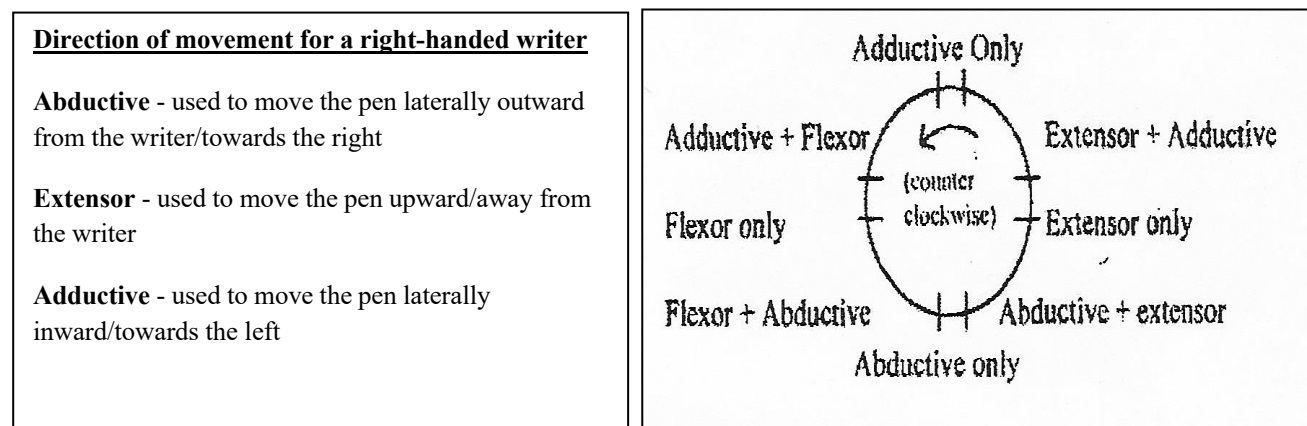


Figure A: It is observable

handwriting is the result of a "complicated interplay of muscle movements of the hand holding the pen" (Matley/Joseph Session 1 Part A, at 7:08). As a result, this feature identifies the individual writer.

In Figure A, the observable evidence shows that, to form the lower circle, the pen was moving in a counterclockwise direction. The malformed circle reveals that the specific writer's abductive + extensor muscles did not cooperate efficiently with the extensor + adductive muscles, resulting in a notable change of direction otherwise defined as the writer's pen scope. A pen scope is "the amount of writing performed



Source: AHAF Journal, Nov.-Dec. 1998, "The Dilemma of Ataxic Handwriting," Marcel Matley

before the writer makes a notable readjustment in movement..." (Hayes 77). Therefore, this observation is unique to the writer and supports an opinion of common authorship.

Normally, when writing a circle, the cooperation of muscles occurs when one set of muscles gradually fades out while another set gradually fades in, resulting in a well-formed circle.

2. Measurable - Measurements provide another fact for use in forming an authorship opinion.

Figure B reveals a common author. In this example, there is a measurable pattern of relative heights. The "h" is clearly taller than the "t." Actually, the t-bar is the beginning point of the "h." The writer moved the pen off the paper after writing the single downstroke of the t-stem and repositioned the pen on the paper to the far left of the t-stem to begin writing the curved upstroke in forming the "h."

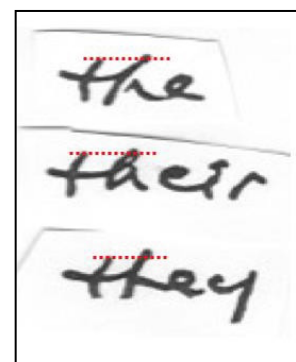


Figure B: It is measurable

3. Habitual - Habitual, as defined by the Oxford English Dictionary (OED), is “in the way of habit or settled practice; constantly, usually, customarily.” A third property that, if observed, will make a characteristic forensically significant for use in forming a fact-based opinion is that the writer makes the same movement throughout the handwriting being examined (See Figure C).

NOTE: The antithesis of habitual is an accidental occurrence which is best defined as "a completely erratic movement and may reflect a momentary interruption in neuromuscular coordination. Thus, accidental occurrences are best defined as a brief, temporary digression from normal writing practices" (Huber/Headrick 51).

A few years ago, while shopping for a smart phone at the AT&T store, I intentionally staged an opportunity to watch my salesman write by asking him to jot down his recommendations for some cool apps. Not knowing what I

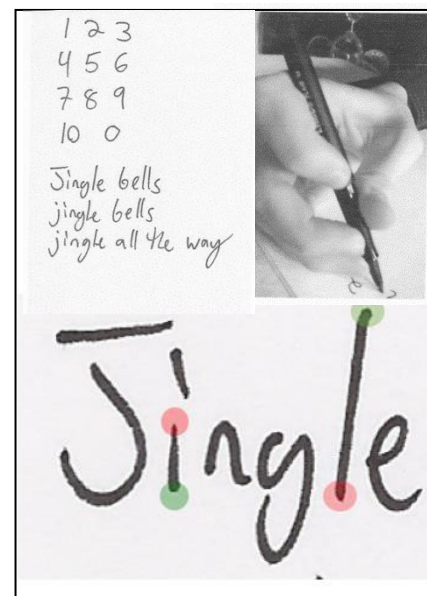


Figure C: It is habitual

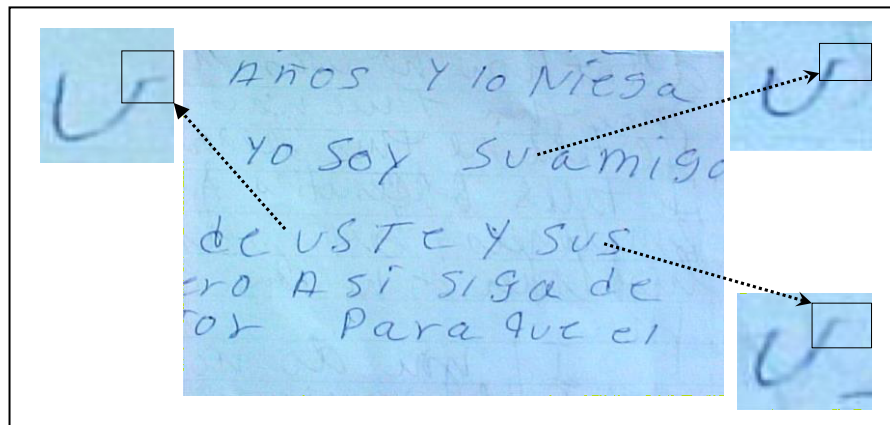
would see while watching him write, I was taken by surprise when I saw, not only his unusual grip, but the way he habitually wrote one specific letter: the letter "i."

I asked him to provide a sample shown here in Figure C. Watching him write, I noticed that he placed his pen at the baseline to begin writing the single, straight-stroke for the letter "i" which moved in an upward direction to complete the stroke. He literally wrote all the other single straight-stroke letters in the reversed direction. When I asked him why he wrote that way, he made clear he wasn't even aware that he wrote that way and could not supply a reason. He did, however, have a reason for his unique grip. As an avid musician, he has enjoyed playing the violin since childhood. It seemed natural to him to grip his pen in a similar fashion as his violin's bow.

THREE ADDITIONAL FACTORS

Further drawing on insights from the above mentioned authorities in our field, a handwriting characteristic is forensically significant when it has three additional factors: it is an inconspicuous movement by the writer; it is a difficult movement

for the writer to change either intentionally or unintentionally; and it is difficult for someone else to observe, let alone incorporate while attempting to successfully



imitate someone's writing (Matley/Joseph Session 2 Part A. at 1:01:30).

The First Factor - It is a characteristic that is hidden from the writer's attention through his/her being unaware of writing it in that particular way. Figure D illustrates the writer's habit of not lifting the pen completely off the paper when finishing the upstroke of the letter "u" in preparation of putting the pen back on the paper to write the next letter. This is specific to the letter "u" and not observed in other final upstrokes throughout the entire note including the "N" in "Niega" observed in the top line of the anonymous note in Figure D.

This note surfaced a few years ago when I was asked to examine the handwriting of twelve suspects in a case involving an anonymous note written in Spanish. The Human Resources Director of a seafood packing facility provided exemplars of who she thought of as the twelve suspects from a pool of forty-five workers. The message in the tattletale note exposed information about a worker involved in an affair with a facility manager who was married and who subsequently denied the alleged affair.

Among other forensically significant characteristics in the handwriting, the final part of the letter "u" in Figure D illustrates an individualizing "hair-stroke," which is defined by Saudek as having been written without pressure (Saudek 378). Because this observation fit the criteria for the first factor described above, and because none of the suspects' handwriting showed a similar "hair-stroke," I formed

an opinion stating that the writer of the anonymous note was not among the group of suspects.

The Second Factor - It is a difficult movement for the writer to intentionally suppress or change. As a simple example, consider the direction of movement while writing the counterclockwise loops of your letter “l” as in the word “ball.” Is it difficult to write your loop going the other way around while writing “ball?”

The Third Factor - It is a handwriting characteristic that is difficult for an imitator of someone else’s writing to notice, let alone incorporate while attempting to write a successful imitation. As an example, from a recent case involving a disputed “Morrison” signature, I examined thirty “Morrison” exemplars with a date range of fifty years including his death bed signature. I observed that every “Morrison” exemplar was habitually written in three parts. In other words, Morrison lifted his pen off the paper three times: Morr/is/on/. The questioned signature had a strong pictorial resemblance to the exemplars. Unfortunately (for the forger), this key feature was inconspicuous, and he wrote “Morrison” in one fell swoop.

CONCLUDING REMARKS

When a handwriting characteristic has the three properties and the three factors discussed herein, it becomes forensically significant because it is an artifact of the writer's movement and, as such, it is an individualized graphic record of the writer’s movement, tying the writer to the written.

NOTE 1: A more comprehensive discussion regarding forensically significant handwriting characteristics can be found in Matley's monograph, "Reliability Testing of Expert Handwriting Opinions."

In forming an opinion regarding handwriting authorship, it is essential to base it on a complex of forensically significant characteristics and to clearly define the logic behind their usefulness to the lay person and/or fact finder as being the result of the writer’s movement behavior.

NOTE 2: You are cautioned to understand that the interrelationship of characteristics is more significant than the characteristic itself. And, a variation in a characteristic is more important than the characteristic itself.

And, the patterns in variations are more important than the variations themselves when using handwriting to form opinions of writer identity. A more comprehensive discussion regarding variations can be found in Matley's monograph, "The Difference a Difference Makes: Variations in Handwriting Identification."

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Based in Portland, Oregon, Jacqueline Joseph is an active member of SAFE with more than 25 years of experience in forensic handwriting and document examination.

Jacqueline is a double board-certified document examiner (NADE and BFDE) and holds a B.A. degree in secondary education from University of Arizona. She is currently earning a Business Communication Certificate through Harvard Extension School.

As the result of her research and study, she has published twenty-seven articles dealing with handwriting tremor, disguise, ambidexterity and other aspects of the field.

With colleague Marcel Matley, Jacqueline co-presented *The Two Pillars of Individuality and Identifiability in Handwriting*, showing how to satisfy the standard for identification by explaining the scientific tie between the writer and the written. Filmed before a live audience at the 2008 NADE Conference in Austin, TX, this presentation was approved for three semester-credit hours at East Tennessee State University.

She will be presenting a poster session at the American Academy of Forensic Sciences (AAFS) in February of 2020 in Anaheim, CA, titled “Testing the Perceptual Accuracy of a Subject’s Ability to Identify Their Own Handwritten Numbers and Words.” Over the years, Jacqueline has presented several poster sessions at numerous conferences, including the 2011 Annual World Congress of Forensics in Chongqing, China.

Jacqueline enjoys participating in Toastmasters International. She is also a tournament bridge player and an accredited bridge teacher.